

PROPHETIC SKYSCRAPERS



THE New World has ever been a violator of tradition. From the day upon which Columbus began his first westward voyage to secure support for a thesis which was probably the world's most epochal violation of tradition, America has seldom done the expected thing. This disregard of tradition has ever obtruded as an evidence of disrespect for worth while conventionalities, however. Rather, it has followed always the course of necessity and progressiveness, untrammelled by blind and sentimental adherence to custom.

Take, for instance, the skyline of New York, Chicago, Philadelphia, San Francisco, or any of the large cities of the United States. Tradition had no part in their building. They were necessary, and presto! they appeared, their spires and towers pointing like prophetic fingers skyward, themselves a new chapter in the world's architecture, and showing the way to still other chapters yet unwritten.

Contribution to Architecture. Architecture had its origin in the endeavors of man to provide for his physical wants and needs. Egypt, Rome, Greece, India, Spain, Germany, France—in fact, the whole of the Old World civilization developed architectural forms and designs which evolved into the classical architecture—buildings useful or beautiful, or both. Each of the Old World types became a precedent in architecture destined to influence civilization for centuries.

But for the skyscraper there was no precedent, unless the unsuccessful tower of Babel should rise up out of the ashes of antiquity to claim such a distinction. The skyscraper is distinctly the gift of the United States to architecture. And the full richness of the gift is still to be revealed, for it has by-products of enormous potentiality.

The necessity out of which the skyscraper was born also furnished the stimulation for the three inventions that made tall buildings possible—steel skeleton construction, the power elevator and the hollow tile flat arch floor.

Fifty Years Ago. Half a century ago "skyscrapers" towered four to six stories above the streets, and the first nine-story building was a distinct milestone. It was in this first nine-story building that crude passenger elevators were first out in 1870. Prior to this time, however, cast iron was gaining a foothold as a building material, the first cast iron columns making their appearance early in the century. In the early seventies the cast iron frame type of building reached its zenith, the store at Broadway and Ninth now occupied by Wanamaker's being one of the largest of that type. "I" beams made their appearance about 1860, and with their introduction, the development of cast iron columns, and the introduction of the passenger elevator, the skyscraper germ was working in earnest.

"Cage Type" Structures. The skyscraper as it is known today did not jump abruptly from the solid masonry type of structure, with foundation walls of great thickness, which gradually decreased toward the top as the load decreased. There was an intermediate stage, known as "cage" construction, in which floors were supported by an iron or steel cage independent of the walls. It was thus possible to build up the walls outside the "cage" much thinner than in the old type of building, as they had only their own weight to support. This permitted of a great economy of space, a factor which had become of prime importance by reason of the enormous increase in city real estate values.

The widely known World Building, in New York, with its famous golden dome was one of the early cage type buildings, but not the first. The pioneer was the Home Insurance Building, in Chicago, a ten-story structure erected in 1883. New York's first real skyscraper was not built until 1889, when the eleven-story Tower building was erected at 50 Broadway.

The Changing Skyline. New York's skyline was broken in 1897 by the American Surety Building, with its twenty-one stories rising 312 feet above the street. It enjoyed this rare altitude in lone grandeur until it was outtraced by the Park Row building with twenty-six stories.

towering structures in this country. How well this expression was given heroic being is attested by the vast numbers of Old World architects and artists who have come to American cities to study the new building art.

Buildings That Are Cities. These skyscrapers are often veritable cities in themselves. Take, for instance, the two mentioned above. The Woolworth building, with its fifty-eight stories, has a floor space of 550,000 square feet and, due to the manner in which it is divided, has about 14,000 tenants. The Equitable building, which is undoubtedly the largest office building in the world, houses 12,000 tenants in its 1,237,000 square feet. The Union Trust building in Cleveland with a floor space of 1,173,000 square feet is the second largest office building.

If creative beauty had full sway in the building of cities, every congested center would be a veritable fairyland. But the tall building must pay! This question of building for profit is getting constant consideration from the National Association of Building Owners and Managers, and from investors, bankers, corporations and engineers. Even this quest of profitable return acknowledges, however, the sound value of beauty as an investment. Often a builder goes still further, and expends considerable sums in features that cannot possibly be productive of revenue. Call it altruism, self-ad-

Skeleton construction proved to be the most startling of all tall building developments, at least to the average man on the street. The steel frame started skyward, tier upon tier, the riveters hammering together the fabricated members from perch high in the air. Suddenly, one day, stonework or brickwork walls would begin to appear, perhaps half-way up the frame, with nothing below except the steel framework. It was almost like starting a building at the roof, in the eyes of the bewildered onlookers. It was obvious now, that the thick foundation wall had gone its way, and that the height of buildings was to be measured only by consideration of height and safety. High land values were justified, and the compactness of business districts was assured.

Speedier Construction. Steel skeleton construction brought with it a greater erection speed which was proved to be a very distinct advantage. Structural steel members, fabricated before being brought to the job, go up like magic, according to the architect's design.

Skyscraper construction had more than its bare utility and economy to commend it, however, even in its early stages. The architectural monstrosities of the seventies and eighties, and the early nineties began to be replaced with buildings having more of symmetry and architectural simplicity. The skyscraper became, in fact, a distinct contribution to architecture, individual to a high degree, yet happily combining beauty of design with the maximum of utility.

There are none who will suggest that the Woolworth building or the Equitable building in New York are not superb expressions of architectural beauty. They represent both the vision of the builders and the American zest for the game of creating. They are utilitarian, obviously. But utilitarianism has not been allowed to crowd out the aesthetic. The artist was given latitude to express American business of each of these, and many other

vertising, gratification of vanity or what you will—it is the results that count. And those results, painting heroic pictures against the sky, furnish an inspiration and a constant source of delight that no other work of artist or craftsman could provide.

Europe Taking Cue. Now Paris is to have a skyscraper. Other European cities are seriously considering tall buildings. Europe has been slow to adopt the American idea, however, Vienna having long held the altitude record with a building 82 feet tall. But America goes merrily on her way striking boldly into new and original designs which may yet play a major part in the building of the cities of Europe and Asia. The Chicago Tribune building is an example of such pioneering. Height limit restrictions did not prevent the development of a structure of remark-

able beauty, despite the fact that the decorative top, which rises 140 feet above the 260 feet of main building is a concession to art only, and can earn no revenue. Incidentally, the winners of the competition for this building received an award of \$100,000 for their design.

Height Limit Legislation. Height limit legislation may prevent a duplication of the Woolworth building. Unless the entire complexion of American business changes, however, the structural steel skyscraper will continue to combine beauty and utility, and will ever reach skyward in true symbolic fashion.

In a number of cities of the United States, city planning commissions are debating this problem of what to do with the tall building. In some instances the desirability of the skyscraper is being questioned, but the economic problem of land values in congested districts cannot be ignored. Therefore, the general tendency is toward sane legislation which will permit of buildings of sufficient size to be profitably operated when the value of the site and the needs of business are taken into consideration. The main objections to the skyscraper in New York have been eliminated by the adoption of "set-back" architecture, in which the building recedes from the sidewalk line as it goes up.

Greater Steel Utility. With the increasing use of structural steel has come a corresponding progress in the usefulness of the commodity. The work being done by the American Institute of Steel Construction, composed of leading steel fabricators throughout the United States and Canada, is the most recent significant contribution to the usefulness of steel.

Since the open hearth furnace came into general use it has been generally recognized that structural steel was capable of doing more work than was being given it in engineers' specifications. Investigating the possibility for effecting appreciable economies in steel construction, the Institute determined that the basic unit stress of 16,000 pounds per square inch, which was adopted as a working stress by the mills about 1837, was entirely too low. It was determined that the old unit, adopted when steel was produced by the Bessemer process, could easily and safely be increased to 18,000 pounds, and that through a standard specification other appreciable economies could be effected without sacrificing the smallest degree of safety.

Movement Meets Favor. Such a departure from the established practice of more than thirty

years did not present the difficulties that its promulgators might have anticipated at the outset. In fact the saving of at least 12 1/2 per cent on steel construction which the Institute's Standard Specification assured, made the launching of the Specification comparatively easy. Such cities as Los Angeles, Buffalo, New Orleans, Boston, Baltimore, Detroit, St. Louis, Washington, D. C., and many others were quick to see in it a logical development in steel construction, and wrote the Specification into their building codes. Some of the largest cities in the United States are today favorably inclined toward the Specification, and favorable action upon it is looked for in many of them during 1925.

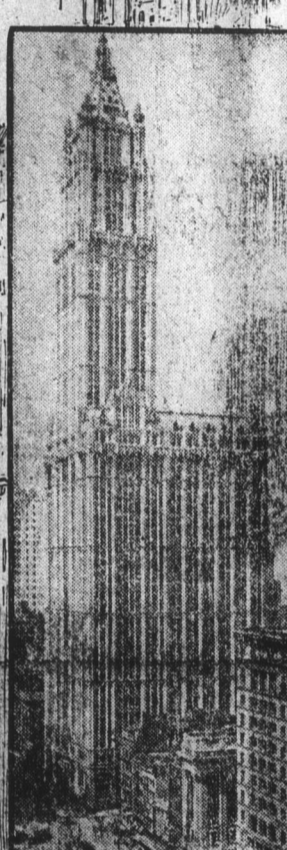
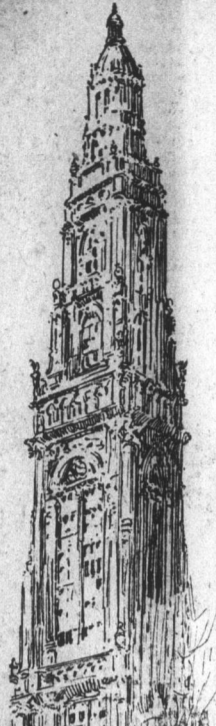
What does this accomplishment of the Institute mean in dollars and cents? The architect of the Cleveland Board of Education has estimated that he can save the taxpayers of that city \$125,000 annually on the single item of structural steel costs for school buildings by reason of the greater usefulness of steel as developed by the Specification. Use of the Specification will mean a saving of about \$2,000,000 annually on public and private construction in Detroit. It has been estimated that in New York City, where about one-third of the structural steel tonnage of the United States is used, the Standard Specification would make possible a saving of \$1,500,000 on the present school building program alone.

Other Economies Forecast. Not content with promulgation of the Standard Specification, the fabricators, working through their Institute have recently adopted the Code of Standard Practice, which is expected to work still further economies by standardizing the manner in which structural steel is bought and sold. The Code of Practice is designed to eliminate a vast amount of confusion which has existed in the relations between buyer and seller for years—and confusion is expensive in any industry.

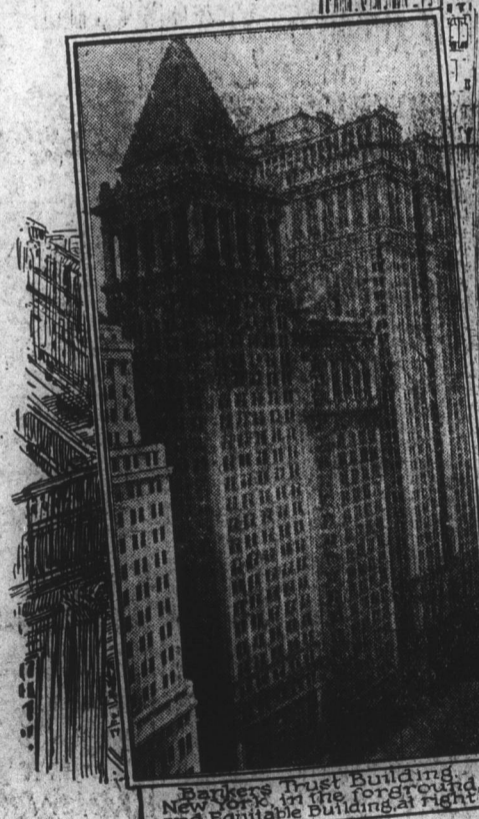
Improved methods of fabrication, stimulation of research into the physical and chemical properties of steel, scientific study of the action of steel members under stress and many other phases of the industry are being given encouragement and consideration by the Institute. In the final analysis the public, represented by the taxpayer and the owner of the buildings in which structural steel enters, will be the principal beneficiary of this activity. But everyone who has any contact with the vast scheme of making, fabricating, erecting or paying for structural steel will participate.

Wider Use of Steel. Structural steel is not to be considered as something appertaining solely to the skyscraper. Nor is it confined to business and industrial construction. Those in closest touch with the trend of building forecast a very extensive use of steel in residences and other small buildings within a comparatively short time. This tendency is being hastened by the increasing price of lumber and the agitation for stringent forest conservation policies. Steel joists are already attaining considerable popularity for first floors of residences and apartments. Metal lath has won an impregnable position. It is not at all improbable that the next step in residential construction may be steel frame throughout, wood being employed in the decorative portions, such as inside trim, floors, doors, blinds, and outside trim, and possibly weatherboarding where brick, concrete or stucco are not used. This does not mean that the use of wood is going to decline in the aggregate. It does point the way, however, to a means of so conserving and intelligently using wood that there will be always a supply adequate to meet every building need.

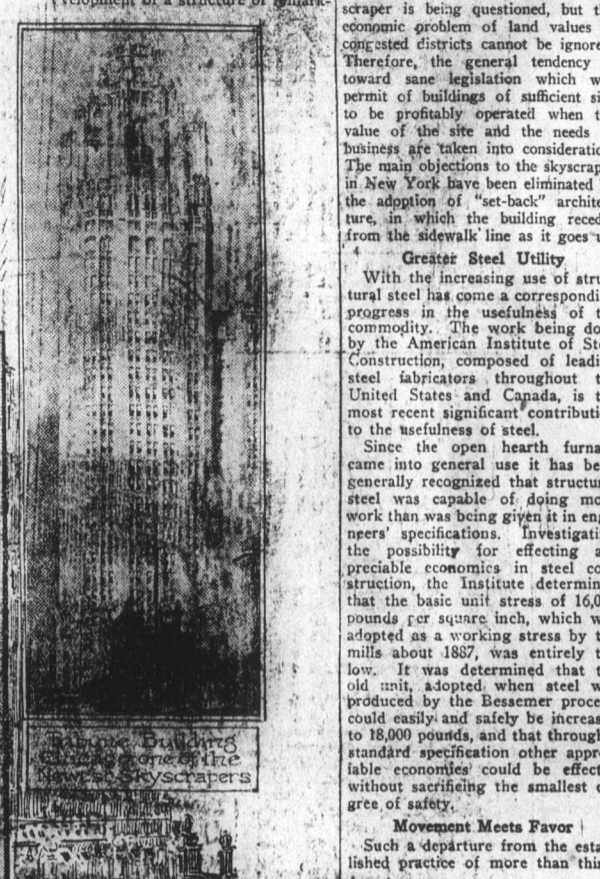
America's skyscrapers are something more than monuments to business and symbols of progress. They are prophets—forecasting less spectacular use of steel, but uses which will be directly shared by the farmer in the remotest homestead, the village dweller and the owner of the palatial city or suburban residence. The new day of steel is dawning.



Woolworth Building, tallest occupied structure in the World



Bankers Trust Building, New York, in the foreground, and Equitable Building at right



Union Trust Company, Cleveland, O., second largest office edifice

